

CLAIMS:

1. System for the conversion between direct current (DC) power and alternating current (AC) power comprising a DC link including a buffer capacitor and a controllable converting arrangement for conversion of between AC and DC power in tandem, whereby the controllable converting arrangement is adapted to effect said conversion between the AC and DC power under the control of a power control quantity that is supplied to a power control input thereof, characterized in that said power control quantity in addition to a component which assures a DC-AC power balance between the DC and AC power also comprises a predictive power control component which is indicative of a change in energy that is stored in the buffer capacitor on a sampling time instant in the cycle of the double frequency voltage ripple component on the buffer capacitor compared with a predetermined amount of energy.
2. System according to claim 1 for the conversion of direct current (DC) power into single phase alternating current (AC) power whereby the DC power from a DC source is fed into a DC-AC inverter arrangement through a DC link comprising a buffer capacitor, the inverter arrangement being adapted to produce AC power in a AC load under the control of a power control quantity that is supplied to a power control input thereof, characterized in that said power control quantity in addition to a component which assures a DC-AC power balance between the power delivered by the DC source and the AC power delivered to the AC load also comprises a predictive power control component which is indicative of a change in energy that is stored in the buffer capacitor on a selected sampling time instant in the cycle of the double frequency voltage ripple component on the buffer capacitor compared with a predetermined amount of energy.
3. The system according to claim 2, characterized in that said additional predictive power forward control component can be expressed by :
$$p_{inv2l} = p_{dc} - f_{ac} C_{dc} (v_{ref}^2 - v_{dcl}^2)$$
wherein p_{inv2l} is the power to the inverter in the sampling period, p_{dc} is the power delivered by the DC source, f_{ac} is the frequency of the AC power that is delivered to the load, C_{dc} is

the capacitance of the buffers capacitor, v_{ref} is a reference voltage and v_{dcl} is the voltage an the buffer capacitor on the sampling instant.

4. The system according to claim 1, 2 or 3 , characterized in that the sampling
5 time instant is selected to be the time instant at which an event occurs from the group of events constituted by the voltage on the buffer capacitor reaching a minimum value, a maximum value and an average value.